

**REMARKS/ARGUMENTS**

**Claim Rejections - 35 USC § 112**

Claim 25 is amended to recite "the most significant of said bit signal is directly connected to a gain control input of the adjustable gain control circuitry". Support is found in Fig. 2 for the direct connection, and in paragraphs [0024 – 0026], and also in Claim 7. No new matter is introduced.

No new search should be necessary since Claim 7 already provides the limitation.

The reason this dependent claim was introduced in the previous amendment is to further emphasize the "gain determined directly" of Claim 1. Motley has to apply counting and therefore it is not direct, but Applicants wonder if there is some simple misunderstanding between the Examiner and Applicants and whether the Examiner is really intending to object to the word "determined" rather than "direct" in Claim 1. Claims 7 and 13 contain words that should have made Claim 1 clear however. This is further expanded upon below.

**Claim Rejections - 35 USC § 103**

Claims 1, 3-7, 9, 10 & 13-24 were rejected under 35 U.S.C. 103(a) as being unpatentable over Motley et al (US 3,931,584), hereinafter Motley, in view of the Applicant admitted prior art, hereinafter AAPA.

Applicants address Claims 22 – 24 first because of the phone conversation, then the rest of the claims.

In regards to claim 22 - 24, the Examiner believed Motley and AAPA teach the wherein said gain is operable to be reduced and increased by different thresholds, respectively, whereby hysteresis is prevented (Column 4, Lines 62-67; Column 5, Lines 1-5; 20-24; Motley).

Applicants respectfully traverse this rejection; Claims 22 – 24 recite "reduced and increased by different thresholds"; whereas in the paragraphs the Examiner cited, the thresholds are the same value (absolute value) thresholds whether increasing or reducing, e.g. Col 4. states  $\pm 3\text{dB}$ , then  $\pm 0.5\text{dB}$ . So whether it's the + direction or the – direction, it's the same magnitude. Col. 5 states "different thresholds", but this is not whether increasing or reducing either because Col. 3 L. 9 – 21 explains the usage of each threshold value -- using the same threshold (absolute value) whether increasing or reducing. Motley is merely offering the flexibility that the level can be selected from a large range of values  $\pm 511$  threshold levels (Col. 5 L. 24), but whatever the choice within 511 thresholds, it will be the same endpoint value in both the + and - directions. Moreover, Applicants apply two different thresholds for the purpose of hysteresis problems as stated in Claims 22 – 24. Recovering from hysteresis requires doing something like + 2.5 dB and – 0.1 dB, so that increasing and decreasing directions need to surpass different threshold magnitude values. During the phone conversation, the Agent contemplated removing the "whereby"

word in the claim, but now believes it is unnecessary because the claims explicitly state "reduced and increased by different thresholds". Therefore Claims 22- 24 are believed allowable over Motley.

Regarding Claim 1, Applicants traverse the rejection in that Motley does not apply a "gain determined directly" as alleged by the Examiner. Regarding Claims 7 and 13, the words "control directly connected" and "determined directly by a single sample" are also not taught by Motley. Motley also fails to teach digital channel filtering circuitry for filtering said digital representation and digital processing circuitry for processing the output of said digital channel filtering circuitry, and because of this there is no incentive to combine Motley with the present application. More important, Motley's technique teaches away from Applicants' intentions and invention; so, there is really no incentive to combine and it is not possible to establish a prima facie case of obviousness using Motley.

Motley has a counting technique run over several clock cycles; Motley monitors how often a threshold is passed (e.g. Col. 3 L. 14 – 15). Therefore, Motley has a time consuming methodology. In contrast, Applicants invention directly and quickly (see paragraph [0020]) changes the gain. By not waiting for the DSP and not even going through a channel filter which requires settling time, Applicants' invention directly and quickly changes the gain. Further Applicants even attempt to avoid hysteresis which takes up time [0027] if oscillations occur. Therefore, Motley teaches away from Applicants' invention and purpose.

Moreover, Motley has a fine and coarse AGC and emphasizes tracking minute fluctuations (Motley Col. 9 L. 4 – 7). In contrast, Applicants apply a coarse bit right away to change the gain. So again Motley teaches away from Applicants' claims and invention.

Therefore, it is not obvious why Applicants would even look to Motley for design guidance. And certainly Motley would not look to the Applicants' invention for guidance when Motley is motivated by fine adjustments, small fluctuations and counting over a long period. Also, Motley does not have a DSP nor a channel filter; so, Motley does not encounter the dilemmas presented in Applicants' disclosure.

Therefore, Claim 1 and similarly Claims 7, 13 should be allowable because a prima facie case for obviousness cannot be established.

Secondly, it is not clear to the Applicants whether the Examiner and Applicants are somehow confronted with a semantics issue for Claim 1 and Claim 13. Applicants use the words "gain determined directly" to mean that the bits go to the AGC amplifier directly to control the gain, as shown in Fig. 2. Is the Examiner perhaps really objecting to the word "determined" rather than the word "direct"? Applicants may substitute the word "controlled" for "determined" if this is the actual problem at hand. Otherwise, Applicants offer the following argument:

Although the Examiner rejected Applicants prior arguments that Motley lacks "direct" gain determination as recited in the claims, the Applicants

respectfully traverse the Examiner's concept of "direct" and arguments on p. 7 of the present Office Action. The Examiner claimed there is direct determination because all of the circuits between the MSB and the actual AGC amplifiers are considered an AGC amplifier; they are not. It is respectfully submitted that the Examiner has mistakenly confused the label "AGC 17" with the definition of automatic gain control as provided in amplifier design textbooks, or even in Motley itself. Applicants' invention relates generally to automatic gain control such by the way of the textbooks, and not by the label "AGC 17". The Examiner lumped all of the circuits 61, 59, 60 as being an automatic gain control circuit; they are not. For example counter 59 is not an automatic gain control circuit even as defined by Motley, let alone by a traditional definition. Motley Col. 1, L 13 – 16 states "automatic gain controls typically include an amplifier followed by an attenuator which as a plurality of taps". Therefore, even Motley does not consider circuits 61, 59, 60 as automatic gain controls. The "AGC" label applied to 17 is merely a label, and inside element 17 are the actual automatic gain controls amplifier elements 27 and 29, following the definition.

Thirdly, by the Examiner's own citation of Motley's Col 9. L 4 – 7, which states "by directly monitoring the digital characteristics of the digital output words 35, the fine AGC 29 is provided with a capability for tracking minute fluctuations". Therefore, Motley does direct monitoring, not direct control (determination) of the AGC (amplifier) gain. Direct monitoring involves counting and additional complicated circuitry; so this is a very indirect way of controlling the AGC (amplifier) gain.

Therefore Claims 1 and 13 should be allowable because Motley is missing the element of direct gain determination. Motley is further missing the element of "single sample" as recited in Claim 13. Applicants traverse the Examiner's evidence of Col 5 L 25 – 30 as being equivalent "single sample" of Claim 13. Motley uses many samples and has a counter to check when a sample is over a threshold. Applicants submit perhaps the Examiner confused the words "single sample" with something else.

Claim 7 should be allowable as well because Motley lacks the element "adjusting the gain by a control directly connected and responsive to bit values". Motley is not connecting the bits 37, 39 directly to the automatic gain control circuit 27 and 29 but rather through additional circuitry 60, 59, 61.

The dependent claims of Claim 1, 7 and 13 should also be allowable by virtue of their dependency on claims which are believed allowable.

Further, when the independent Claims are allowed, Applicants wish to add a dependent claim directed to paragraph [0020] of the disclosure. This is not done at this time for fear of receiving a cursory Advisory claiming that a new search must be done.

Respectful request is made for reconsideration of the application, as amended, and for an issuance of a Notice of Allowance. Please charge any missing fees to the deposit account 20-0668.

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